**NATURAL RESOURCES CONSERVATION SERVICE**

**CONSERVATION PRACTICE STANDARD**

# FISHPOND MANAGEMENT

**(Ac.)**

**CODE 399**

## DEFINITION

Managing impounded water for the production of fish or other aquatic organisms (non-commercial use).

## PURPOSE

1. To provide favorable habitat for fish and other aquatic organisms.
2. To develop and maintain a desired species composition and ratio.
3. To develop and maintain a desired level of production.

## CONDITIONS WHERE PRACTICE APPLIES

In warm and cold water ponds, lakes, and reservoirs.

**General Criteria Applicable to All Purposes**

***Individual assistance is required to provide stocking rates based on impoundment size, water quality, time of stocking, and management intensity.***

***Precautions will be taken to prevent fish in the impoundment from escaping into adjoining waters. Care will be taken to prevent introduction of non-native species into adjoining waters where native species might be adversely affected.***

***No additional fertilization is needed to produce adequate plankton densities.***

***In West Virginia ponds with water having a pH range of 6.5 - 8.5 and an alkalinity 50 -150 ppm $CaCO_2$ Equivalents is optimum for survival and reproduction of fish.***

***The site will be protected from flooding, sedimentation, and contamination. Excessive nutrients will be prevented from entering the pond. At a minimum, a dense grass/legume buffer around the edges of the impoundment will be maintained to filter nutrients and other pollutants. This buffer shall conform to WV Practice Standards 390, Riparian Herbaceous Cover; 342, Critical Area Planting; and/or 393, Filter Strip as appropriate.***

***Measures will be designed to control agricultural pollutants when farming areas adjacent to impoundments. Facilities will not be located downstream from feedlots, barnyards, or other areas posing a risk of pollution.***

***Minimum depths of all areas of any type pond will be 3 feet. For cold water ponds depths will be 10-12 feet for 1/3 of the pond. For warm water ponds, depths will be 6-8 feet for 1/3 of the pond. Cut slopes should be 1:1 to the 3 ft depth.***

***Aquatic vegetation shall be controlled to the degree that it does not interfere with pond management or fish population.***

**Criteria for Pond Construction and Renovation**

***Impoundments designed for fish production will be built in accordance with WV standard 378, Pond and the NRCS National Engineering Handbook (NEH), Part 650, Engineering Field Handbook Chapter 11.***

***Several features may be incorporated into pond designs that will facilitate future management and productivity. Water control devices should be designed for rapid drawdown and maintenance of drawdown to desired depths. The minimum capability will allow water levels to be drawn down to a 3 ft depth and maintained indefinitely. Refer to the EFH, Chapter 6 for types of water control structures.***

***Drainpipes may be oversized to permit rapid drainage (4 ft. within 48 hours) and maintenance of drainage.***

***Bottom water release structures are strongly recommended during construction of new impoundments to limit the creation of oxygen deficient zones. The impoundment bottom should be graded to provide positive drainage to the drain entrance. The NEH Part 650, Engineering Field Handbook, Chapter 6 should be consulted for more information regarding these types of structures.***

***Habitat structure devices such as large rocks, stumps and artificial reefs may be placed in the impoundment. If applicable trees and tree stumps can be left or placed in part of the impoundment if the water depth will be maintained at a minimum of 3 ft. in those areas. Refer to the section of this standard entitled "Structure".***

***For new and existing impoundments, a soil test will be taken to determine the pH. Agricultural lime should be applied to bring pH levels up to 7.0 if the test is 5.5 or below.***

***Structure***

***Artificial reefs or fish shelters made from brush, tires, wood, concrete blocks, etc. are excellent ways to concentrate fish and provide cover for prey species such as bluegills where little or no natural cover exists. Shelters will be placed in 4-8 feet of water. No more than 2 shelters (totaling 50 sq. ft) will be used in impoundments less than one acre. In impoundments greater than one acre use no more than 2 structures per acre.***

***Population Control***

***For information concerning population control in existing ponds refer to Appendix I of this standard.***

***Species Selection and Stocking Rates***

***For information concerning stocking rates and species selection refer to Appendix II of this standard.***

**CONSIDERATIONS**

***Consider the potential effects of aquatic nuisances such as crayfish, turtles muskrats and various plant species.***

***Consider amounts of water flowing through the pond during the growing season (i.e. the water is removed and recharged in less than 30 days) especially when adding substances such as lime.***

***Consider the potential for overcrowding which greatly increases the likelihood of disease and parasites.***

***Consider testing the alkalinity of the impoundment water to assure that it is not below 50 ppm $CaCO_3$ Equivalents.***

***Consider the amount of dead vegetation or other decomposing organic matter if photosynthesis is to provide sufficient oxygen levels.***

***Consider the effects of migratory and resident waterfowl usage.***

***Consider regularly testing dissolved oxygen levels so that they do not drop below 4.0 ppm. Continuous low levels may require mechanical aeration.***

***Consider the effects of seasonal turnovers, or inversions, when the oxygen deficient water at***

***the bottom of the pond overtops the oxygenated layer at the top.***

***Consider using non-toxic dyes as opposed to chemical herbicides to shade out nuisance aquatic plants.***

***Consider the management effects on livestock when the pond is used as a water source.***

***Consider labor, expense, lifecycle and time when deciding on methods to remove aquatic nuisances.***

***Consider upstream sources of erosion and sedimentation during management activities.***

Consider alternatives to the use of pesticides in the drainage area above the site, which may have negative impacts to water quality.

***Consider downstream effects when manipulating water levels.***

***Consider the effects of surrounding vegetation (e.g. shading) on the impoundment.***

***Consider the effects on the movement of dissolved substances to ground water***.

***Consider the effects on the visual quality of water resources.***

***Consider the effects of water level manipulation on any adjacent wetlands.***

**PLANS AND SPECIFICATIONS**

Plans and specifications for fish and other aquatic organism management will be in keeping with this standard and will describe the requirements for applying this practice to achieve its intended purpose. Specifications for this practice will be prepared for each site. Specifications will be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other documentation.

Requirements for the operation and maintenance of this practice shall be incorporated into site specifications.

***The following information as a minimum will be documented in the site specifications or conservation plan:***

1. ***Stocking Rate(s) and species.***
2. ***Method of population control and procedure to harvest excess fish.***
3. ***Impoundment modification (if applicable).***
4. ***Operation and Maintenance including:***
   - ***a. Harvest Management***
   - ***b. Aquatic Plant Control***

**OPERATION AND MAINTENANCE**

The operator will receive a plan or specifications describing the management and corrective actions that are required for the successful management of the pond, lake or reservoir.

***At a minimum, operation and maintenance plans will provide for fish population monitoring and manipulation, fish harvesting, aquatic weed control, water quality management and shoreline vegetation maintenance.***

***<u>Monitoring of Fish Populations</u>***.

***Pond fish populations will be checked on a regular basis by analyzing catches from seine hauls, trapping, observation and/or catches from sport fishing.***

***In warm water ponds, inventories will be performed in early to mid-July after bass and bluegill have spawned.***

***Trout and channel catfish populations will be checked by analyzing catches from fishing. As trout and catfish populations decrease, managers will decide when to restock.***

***If grass carp are present, they will be checked by observing the results of their feeding on aquatic plants. Restock as needed based on plant growth and the number of carp attaining sizes at which they are less efficient at weed control.***

***Water Quality Management***

***When pond water pH tests less than 6.0 apply 800 lbs. of finely ground agricultural lime at one-week intervals until the water pH is 6.5 or higher. If needed add more lime at one week intervals. For chronic areas, check monthly and apply when the pH tests below 6.0.***

***In instances where pond water is continuously muddy, check the watershed for critical sediment producing areas, and for the presence of bullhead catfish or common carp and correct those situations. Agricultural gypsum ($CaSO_4 \cdot 2H_2O$) may be used at a rate of 500 lbs. per acre-foot of water. After one week if the water is still muddy apply 125 lbs. per acre foot.***

***Refer to Appendix III for more information concerning harvest management, removal of undesirable and overpopulated populations and supplemental feeding.***

***Aquatic Plant and Animal Control***

Biological, mechanical, and chemical methods can be used in combination to control aquatic plants as they develop.

***Refer to Appendix IV for information concerning the control of various plant and animal pests.***

***WV Internet Resources***

***"Triploid Grass Carp as a Biological Control of Aquatic Vegetation" :***
http://www.wvu.edu/~agexten/aquaculture/triploid.htm

***"Pond Scum Wipe-Out!! Control of Nuisance Algae in Ponds" :***
http://www.wvu.edu/~agexten/aquaculture/pondscum.htm

***"Sources of Live Fish in West Virginia" :***
http://www.wvu.edu/~agexten/aquaculture/lvefsh.htm

***"Permits and Inspections Required in West Virginia"***
http://www.wvu.edu/~agexten/aquaculture/permits.htm

****Bold Italics indicate changes made or information added to the national standard by West Virginia.***

## REFERENCES

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